Frankly Speaking

Traffic Engineering Moves Ahead

MEASURED in terms of the development of the INSTITUTE, the traffic engineering profession has grown steadily and soundly during the past year. Traffic engineering techniques and principles have been widely accepted and applied.

More applications have been received for admission to membership in the INSTITUTE than in any previous year. Interest is from men of many professional backgrounds, experiences, and positions.

All publications of the INSTITUTE, and especially TRAFFIC ENGINEERING, have grown in size, quality, and distribution. They are now widely sought and recognized.

With the wars in Europe and in the Pacific in their most critical and tumultuous stages, members of the INSTITUTE and others in the traffic engineering profession have been able during the year to render most valuable services through work with the Transportation Corps, the Corps of Engineers, the Provost Marshal General, the Navy, and other branches of the Armed Services. Contributions on the home front have been of equal importance and significance, with civilian transportation in its most serious stage.

Through its committtees, the INSTITUTE has contributed to the work of national groups and agencies in not only wartime matters but in the development of plans and policies for highway transportation in the post-war period.

These, and other achievements, cannot be credited to a small number of individuals, or even to specific groups of individuals. Every member has assumed his proportionate part in advancing traffic engineering and to each goes crédit. Much has been accomplished through the hard and persistent work of the entire I.T.E. membership.

The war is over! The INSTITUTE has the responsibility of leadership and direction in the reconversion from war to peacetime transportation conditions. This job may even be more difficult than those imposed during the war. Increased motor vehicle use, old and wornout cars, "war-relieved" attitudes, extensive roadway construction programs, and other factors will make the needs for specialized traffic treatments more important than ever before. Agencies engaged in highway transportation will be challenged by the magnitude and scope of the problems which will be thrust upon the Nation immediately. So, while the INSTITUTE can now very proudly look back on a year of success during the grave war period, it must nevertheless be cognizant of the problems which lie ahead and must plan to meet them surely and effectively.

Secretary-Treasurer.

Origin and Destination Surveys in Urban Areas

Editor's Note: This is a condensation of the report of the Committee on Origin and Destination Survey Techniques, Traffic and Operations Department, Highway Research Board.* Owing to limited space, the detailed description of new survey techniques, included in the original report, are not presented here. The committee report was prepared by John T. Lynch, secretary.

PREFACE

In December 1944, Congress passed the Federal-aid Highway Act, which amended the Federal law so as to recognize the needs of urban highway development. The law makes Federal-aid funds available for projects in urban areas, and authorizes the designation of a National System of Interstate Highways which will be a network of limited mileage, connecting and penetrating the major centers of population.

These far-reaching changes in national policy are the result of ten years of research carried on through the state highway planning surveys. Begun in 1935 by the various highway departments, in cooperation with the Public Roads Administration, the surveys made possible the writing of those two milestones in American highway history: "Toll Roads and Free Roads" (1939) and "Interregional Highways" (1944).

Mile-by-Mile Inventory

The studies were designed to inventory the nation's highway systems, mile by mile; to find out what services are rendered, who pays for the facilities, and to generate the factual data on which an orderly development of highways in accordance with needs can be charted.

The highway planning surveys were confined largely to rural highways and their usage. It is a paradox of our times that the studies which produced such extensive data on rural highways should be the ones to disclose the urgency of urban improvements where comparable factual information is not generally available.

O. & D. Project Committee

Late in 1943 the Traffic and Operations Department of the Highway Research Board appointed a project committee to study origin and destination survey techniques. This report briefly reviews the various methods used, and describes in some detail the results obtained to date. It is a report of the Project Committee of the Highway Research Board, and was prepared by its secretary, John T. Lynch, of the Public Roads Administration, who drew heavily upon the results of many of the city traffic origin and destination surveys now under way. Every member of the committee assisted in the preparation of the report by providing data, valuable suggestions, and critical review.

Enough already has been developed to show beyond doubt that data collected in good origin and destination studies are necessary not only in locating and designing new facilities properly, but also in providing more efficient use of present street and parking facilities. The information also is important in broad planning for fu-

* Members of the O & D Committee are: Floyd M. Braff, James S. Burch, Nathan Cherniack, Fred W. Fisch, Roy E. Jorgensen, Harry W. Lockner, Ladislas Segoe, I. S. Shattuck, Lawrence S. Waterbury, Burton Marye, D. Grant Mickle, chairman, and John T. Lynch, secretary.

ture urban development, because of the close relationship between transportation in the city and its housing, schools, stores, and other facilities.

During the coming months, more information will be developed from the cities in which surveys have been conducted, and in others not yet started. Refinements in survey techniques and additional uses for the data can be expected, so that this first report of the committee is a report of progress to date.

REPORT

For many years, origin and destination surveys have been made at river crossings in connection with specific problems, such as the selection of the proper location for a new facility, the estimation of the traffic volumes which should be assumed in the design, and the determination of the economic practicability of toll crossings. For example, the New York Port Authority has collected and used much data concerning the origins and destinations of the trans-Hudson vehicular traffic.[1]

Another important use for surveys of this character has been in the investigation of proposed by-passes around cities. Origin and destination data obtained at stations located on highways where they enter the urban areas have been employed in estimating the number of vehicles which would use a by-pass, if constructed, the location which would be of most service to traffic, and the benefits which would accrue to the users. While such surveys have shown the need for by-passes in some cases, they have generally indicated that most of the approaching traffic is destined for the city itself, rather than beyond it, and would be served best by a highway that would permit free and uninterrupted travel to or near the heart of the city. This finding has led to the realization that the principal need in most large urban areas is for express facilities into and through the city. As such facilities would be used by intracity traffic to an even greater extent than by through traffic, the need has developed for origin and destination studies including within their scope travel with origin and destination both within the city, as well as that extending on to the rural highways.

Techniques Well Developed

The techniques for the surveys at river crossings, and at the outer fringes of urban areas have been well developed and are comparatively simple. For a representative period of time, all vehicles are counted and classified as to type, and the drivers of all, or a representative portion, are stopped and asked the origin and destination of the trip and the location and purpose of any intermediate stops. If only a portion is interviewed, percentages calculated from the origin and destination questionnaires are applied to the total traffic observed.

The determination of the origin and destination of the intra-city traffic is much more difficult, because of the larger traffic volumes and the many alternate routes of travel afforded by the street grid. These same factors make it impossible to estimate accurately the benefits which would accrue from any improvement, or the location which would best serve traffic, from an observation of traffic counts and turning movements alone. Traffic in an urban area is fluid in nature; it may shift from one route to another to avoid congestion and delay, or to take advantage of especially attractive facilities. It is only through a knowl-

[1] "Geographic Distribution of Trans-Hudson Vehicular Traffic in 1935," WPA Project No. 665-97-3-13.

edge of origins and destinations, therefore, that a determination of needed traffic routes can be made.

Methods Previously Used

For the past several years there has been a growing realization that new techniques would have to be developed for urban origin and destination surveys; in fact, procedures somewhat experimental in nature have been devised and used in a number of cities. In some cases as, for example, in Columbia, S. C., the conventional methods of the external surveys have been employed within cities and traffic has been stopped and interviewed at points of traffic concentration. Such methods, however, are applicable only to problems of limited scope or to those of a more general nature in small or medium-sized cities in which most of the traffic funnels through a few bottlenecks. In any case, the large traffic volumes which occur within urban areas make roadside interviewing extremely difficult.

In Chicago, a comprehensive survey was made, in which routes of travel were traced for a day by the observation of tag numbers as the vehicles passed stations which encircled numerous zones throughout the city. Boy Scouts were used as recorders and the supervising personnel was supplied by the States, municipalities, counties, and other jurisdictions which participated in the survey. The voluminous data obtained were analyzed by punch-card methods. The survey was successfully carried out and proved to be of great value in the planning of highway facilities.[2] Surveys much more limited in scope have been made by similar methods in Texas and elsewhere.[3] Such surveys are quickly organized and analyzed and give invaluable assistance in the solution of definite urban problems where time is a vital factor.

Cleveland and Detroit Studies

In Cleveland, questionnaires were distributed to workers through their employers to determine the daily movements to and from work.

In Detroit origins of workers in all major industrial plants were obtained by analysis of a "swap-ride" questionnaire which was distributed by the local Office of War Transportation.

Based on the previous experience in Cleveland, the Ohio Department of Highways decided that better results could be obtained by questioning workers in their homes, rather than at their place of work, and in a similar origin and destination survey in Toledo the census tract of residence was used as the basis of sampling.[4] Through the cooperation of the public and parochial school authorities pupils obtained information on the means, route, and time of travel to and from work on a specified day by all workers in their families. Expansion was made on the basis of the number of gainfully employed persons residing in each tract as shown by the census. The data were correlated with ground counts and the origins and destinations of peak-hour travel, which is composed mainly of travel to and from work, were thus determined.

In several urban areas, including the Ansonia-Derby-Shelton area in Connecticut [5], Albuquerque, N. M., and Louisville, Ky., [6] the origins and desti-

2 "A Traffic Survey of the Chicago District," by the Cook County Highway Department, April 1943.

3 "Preliminary Report on an Expressway Through and Between the Cities of Dallas and Fort Worth for the Texas Highway Department," by Parsons, Brinckerhoff, Hogan and MacDonald, October 1944.

4 "Toledo, Ohio, Regional Traffic Study, 1943," Ohio Department of Highways, Toledo Traffic Commission.

5 Highway Research Board proceedings, 23rd annual meeting (1943), pages 363-381.

6 "Traffic Analysis and Expressway Plan for the City of Louisville, Ky.," by H. W. Lochner and Co., September 1944.

nations of traffic counted on the streets, especially at bridges and other points of concentration, were assumed to be distributed to various zones in accordance with the estimated relative importance of each zone as a source or objective of traffic. The estimates were based on data obtained at external stations, on census data relative to each zone, and on factors developed in more elaborate surveys in other cities. As more data become available from surveys now under way, it should be possible to establish relationships which will aid greatly in future estimates of this kind.

New Technique Developed

Proposals for large Federal appropriation for post-war highway construction, including, for the first time, substantial sums for the relief of city congestion, made it highly important to develop and perfect techniques of general applicability which would give a basis for the determination of traffic needs in urban areas. After a thorough examination of the procedures which had been used, including those described above, and conferences with those who used them, the conclusion was reached that interviews made at a cordon of external stations surrounding the urban area and in a representative sample of the homes within the area would give the information of greatest value for the least expenditure of manpower and funds. These interviews would be so conducted as to develop information concerning all of the travel within the area on a typical weekday.

The procedure already perfected in the by-pass studies, with some relatively minor modifications, was suitable for the interviewing at the cordon of external stations. For the home interviews, however, an entirely new technique had to be developed, because the determination of a day's travel by questioning residents in their homes had never been attempted before, except as regards travel to and from work in the Toledo survey, above described.

In other fields, however, the science of sampling through home interviews was well developed. The Bureau of the Census in particular, had used this method extensively to determine trends between census years as well as to obtain special information for numerous governmental agencies. For example, a consumer requirements survey was conducted in 1943 for the Office of Civilian Requirements by the Bureau of the Census, assisted by an advisory board composed of most of the nationally known public opinion sampling experts. In this survey it was established beyond question that a sample carefully distributed as regards place of residence would be representative in all other respects. The 4,935 households in which interviews were conducted for this Nation-wide survey were selected solely on the basis of geographical location, yet the distribution as regards race, size of family, occupation, etc., was very nearly the same as in the 1940 census.

In order to take advantage of their extensive experience in sampling and interviewing, the Bureau of the Census was asked to assist in the development of procedures and numerous conferences were held between representatives of that bureau and those of the Public Roads Administration. In addition, at the request of the State Highway Department of Georgia, employees of the Bureau of the Census later assisted in the actual field work in Savannah.

Following conferences among the officials of the state highway departments, cities, and the Public Roads Administration, in which definite procedures were agreed upon, work was started during March, April, May and June, 1944, in Tulsa, New Orleans, Little Rock, Kansas City (Kan.), Kansas City (Mo.), Memphis, Savan-

nah, Oklahoma City, and Lincoln (Neb.) in the order named. Based on experience gained in these cities, a manual was prepared and distributed to district engineers by the Public Roads Administration on July 17, 1944. Subsequently, work has been started in Nashville, Shreveport, Denver, Omaha, Greenville (S. C.), Fort Wayne, Council Bluffs, Milwaukee, Atlanta, Cincinnati, Covington-Newport (Ky.), Spartanburg (S. C.), Richmond (Va.), Providence (R. I.), and Charlotte (N. C.). In all cases the surveys are being made by state highway departments in cooperation with the Public Roads Administration and with city officials. The metropolitan areas of Kansas City, Omaha and Cincinnati lie in two states and, in each case, both states have adopted identical procedures and are working in close cooperation.

Other Studies Under Way

As of July 1, 1945, O & D studies were also underway in various stages of progress in Mason City (Ia.), Springfield (Mo.), Baton Rouge, St. Louis, Boston, Waycross (Ga.), Indianapolis, Ottumwa (Ia.) Newark (N. J.) and Baltimore.

NEW COMMERCIAL BUILDINGS OBLIGED TO PROVIDE PARKING FACILITIES

The Board of County Commissioners of Montgomery County, sitting as a district council for that portion of the Maryland - Washington regional district within Montgomery County, has adopted an ordinance requiring that on and after July 5, 1945, no application for a building permit for a commercial or an industrial building in any commercial or industrial zone shall be approved unless there is included with the plan for such building or improvement a plot plan showing the required open space to be provided in connection with such structural improvement for off-street parking. The ordinance does not apply to the business district of Bethesda, Silver Spring, Takoma Park, Kensington and certain other areas.

The schedule provides that for theatres, auditoriums, stadiums, recreational establishments there shall be one parking space for each six seats. For each one-story commercial building devoted to retail trade, one off-street parking space for each three hundred square feet of floor area; for each commercial building in excess of one story, one parking space for each three hundred square feet of ground floor area and one parking space for each five hundred square feet of upper floor space; for office buildings, professional buildings, etc., one parking space for each four hundred square feet area of a one-story building and one space for each seven hundred and fifty square feet of upper floor area in addition in buildings over one story; for each restaurant, one parking space for each fifty square feet of floor area; for each hotel, one space for each five hundred square feet of sleeping room area. All off-street parking facilities shall be located on the site or conveniently near to the main building to which such parking facilities are pertinent.—*American Society of Planning Officials News Letter.*

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STATE FUNDS APPROPRIATED FOR CITY PROJECTS

The State of Washington authorized the state highway department to use state funds to acquire rights-of-way, and construct and maintain city streets forming a part of a primary state highway within the city; and set aside $10,000,000 for post-war public works in municipalities. Pennsylvania appropriated $1,000,000 to municipalities for preparation of plans and specifications for public works.

If We Want Safety, We Can Have It

A Radio Commentary by W. Earl Hall

Editor's Note: Managing editor of the Mason City (Ia.) Globe Gazette, Mr. Hall has long been active in safety work and is a former president of the Iowa State Safety Council. He now serves as vice chairman of the committee on program promotion of the National Committee for Traffic Safety. We are indebted to the National Committee for Traffic Safety for bringing this straight talk to our attention.

EVERY now and then in the grist of mail which reaches me, as an editor with a known interest in the safety cause, I receive this utterly simple suggestion for solving the nation's future traffic safety problem: "Just continue the speed limit which has been imposed on our motoring public by the war."

How I wish the problem were that simple of solution. But it isn't—and for a number of reasons.

In the first place, the assumption that the wartime speed ceiling has been 100 per cent successful is sadly erroneous. Allowing for the greatly curtailed total mileage, the number of highway accidents suffered these past four years approaches amazingly close to the average of the pre-war years.

Not the American Way

But even if the reduced speed plan were the complete success which many assume it to be, it wouldn't be the American way of doing things in normal times. The American way is to speed up—not slow down. And there's not the slightest evidence on hand that this fundamental characteristic in our people has been amended.

To the contrary, the evidence is that the "hurry up" principle has been accentuated by the war. The millions of fine lads who have become accustomed to living dangerously—flying at 300 or 400 miles an hour and that sort of thing—are going to be a part of our motoring public in the years just ahead.

Let's not kid ourselves about this matter. Let's be realistic. Let's face the predictable truth. We've got to look forward to higher speeds, not lower speeds. For a time it's going to be higher speeds in our present antiquated cars. Whether this will be for a few months or a few years remains to be seen.

And, very frankly, I'm less concerned about our youngsters coming back from the war than I am about those on the home front with reactions blunted and dulled by four or five years of slow driving. Our average age will be just that must greater —four or five years — and physical alertness has a tendency to deteriorate with age. We'll not be as quick on the draw as we used to be.

"Ordinary Guys" Present Big Problem

That's where the real problem will lie. Let's not deceive ourselves into thinking that these adventure-seeking lads fresh home from the wars will be our only—or indeed our major—problem on the highways. The really big problem will be you and I, just ordinary guys.

Up to this time in this commentary, I seem to have taken a rather gloomy view of the future. So I think I'd better correct that impression.

The truth is that I am not downhearted at all. I'm not a defeatist. To

the exact contrary, I feel—and I feel very deeply—that the traffic problem not only can be but is *going* to be solved. The solution will come from intelligent action, not from mere wishful thinking.

To start with, it's going to be necessary to recognize the nature and the scope of the problem confronting us. Those who glibly think that solution lies in continuing the speed limitation just aren't doing that. They're revealing a pathetic disregard of the plain facts of American life.

The scope of the problem is made manifest to us when we consider that in the half century since the advent of the automobile a considerably greater number of Americans have been killed on streets and highways than in all our wars within that same period, including the conflict just ended.

Of course, if you wanted to base the comparison on injuries rather than on death, the margin on the side of motor vehicle accidents as against war would be even more pronounced. In the field of traffic accidents, there are roughly 30 injuries to each death; in war the disparity isn't nearly that great.

All of this I mention by way of convincing you that in emphasizing the vast importance of traffic safety—all forms of safety, for that matter—I am not unduly minimizing the importance of war. My aspiration is for a world made secure against both the slaughter of war and the slaughter of peace—on our highways.

Need More Than Wishful Thinking

Both can be achieved—but not by mere wishful thinking, not by assuming things that are not true, not by kidding ourselves into the belief that accidents are something that happen to the other fellow, not to us. Nothing good will ever come out of such an approach and such an attitude as this.

In this bit of preaching, I'm talking to *you*—not to somebody else in the room, not to the fellow across the street, I'm talking to *you*. For in the final analysis, it's the sum total attitudes of the individual citizens of America which will determine whether an effective solution is found to the mounting problem of traffic slaughter.

What *you* think and what *you* do in effecting that solution are enormously important. Remember that always.

For the past 15 years or so I've been writing editorials about safety and chasing up and down the country admonishing people to be careful with their own lives. A good many people have let me know, in person or by letter, that they think I'm a very foolish person.

Safety Efforts Futile?

Once the president of an insurance company expressed the view that safety efforts are futile by their very nature. Killing on our highways, he argued, is the inevitable penalty we pay for progress. "It's too bad," he added, "but there's nothing much we can do about it."

An editor friend, irked by my safety preachments, once wrote me thus:

"We're all going to die some day, aren't we? Well, what great difference does it make whether we die on the highway, and get it over in a hurry, or wait and die in bed from cancer, diphtheria, scarlet fever or some other disease?"

Before I learned that the man who put this query to me was the victim of inoperable cancer, from which subsequently he died, I considered his question in an objective and dispassionate way, "What difference *does* it make?" I asked myself.

And strangely enough, I discovered that I couldn't prove my case. I couldn't prove that my editor friend was wrong. Life is sweet to me. I want to live out my days. I want

those near and dear to me to live out their days.

But this is a matter of individual viewpoint. I couldn't prove my case. The contention of my insurance friend, however, is something else. His view that highway slaughter is an inevitable penalty imposed by progress can be refuted, indeed has been refuted many times.

Strange Kind of Progress, Indeed!

It's a strange kind of progress indeed that has implicit in it an annual toll of 40,000 or 50,000 killed and more than a million injured. As a philosophy of defeatism, it's comparable with the doctrine of some that future wars are inevitable because man, by nature, is a fighting animal.

My rather extended contacts with the safety problem have developed in my thinking on the subject this fundamental belief, stated over and over again:

When nine out of 10 Americans want safety on the streets and highways—and are willing to pay the price of safety—our country will be on the way to having safety almost over night.

And in this thinking, I'm not indulging in any wishful thinking. Nor am I calling for or expecting any miracle. I'm just as hard-headed about it as I could possibly be.

Like Being Against Sin

When I talk about "wanting safety," I'm thinking of safety in the concrete, not safety in the abstract. Being for safety as a general principle is like being against sin. Naturally everybody favors safety if you put the proposition to him in a general way.

The desire for safety I'm talking about here is one that makes the individual willing in his own daily life to conform to the rules of safety with respect to his own activities.

More than that, this desire for safety I have in mind is a force that would cause the individual to accept the cost of safety without complaint. And that cost is going to be staggering if considered unto itself. For its true proportions, this cost will have to be laid down alongside the cost of accidents.

Consult the Experts

A *nation* committed wholeheartedly to the case of safety would inevitably go to three experts in the field and put this question: "What can you do?" One of those would be the educator, another would be the law enforcer and the third would be the engineer.

From each there would be a counter question. It would be:

"Are you real sure that you're ready to pay the price for what I can do?" There would have to be assurance on this point. Up to this time none of the three has been doing all he can in safety for that very reason. He hasn't been sure, in fact he has had good reason to doubt, that the public was willing to pay the price.

With such assurance, the educator would say:

"In an effective way I can teach safety from the day a youngster enters school. I can weave safety into other courses in an effective way. I can and will give safety and safe-driving a curricular standing in high school. In the end, every high school graduate will either know how to drive or know that he isn't physically or temperamentally qualified to sit at the wheel of an automobile."

It Can Be Done

With such assurance, the law enforcer would say:

"I'll go as far as I can in courting cooperation from the motoring and pedestrian public. But in cases where compliance with the rules of safety isn't forthcoming, I'll crack down without fear or favor. In the past there has been too much public sympathy and support for those who violate the rules. All I want to know is

that by doing my full duty, I shall not be separating myself from my job."

With such assurance, the engineer would say:

"My job is going to be giving America a wholly new system of highways. The first essential will be channelized traffic on all arterial highways. By this, I mean a physical separation between north and southbound traffic and between east and westbound traffic, making head-on collision accidents impossible. With this there must be a vast system of separated crossings, at highway intersections as well as at railroads."

Not Even a Good Start

Incidentally our reaction to this recipe for safety from the engineer would be the acid test of our desire for safety. We here in Iowa—and the same would go for Illinois and many another state—think that our road-building program is pretty near complete. The startling truth is that we haven't much more than made a good start. We might just as well prepare ourselves for that jolt.

In all but a few tiny stretches, our automobiles are coming at each other on a narrow slab of pavement at a collision speed of 70 or 80 miles an hour. After the war, when we return to a cruising speed of 60 or 70 miles an hour, this collision potential will be stepped up to well over 100 miles.

The oncoming driver may or may not be competent. He may or may not be sober. He may or may not be driving on good tires. We put our trust in Providence every time we meet another car. We're separated from it by only an imaginary line. We accept it as a commonplace—but what a time we'd have explaining it to the man from Mars. He'd say we were crazy—and we wouldn't be able to prove that he wasn't right.

You see now, I'm quite sure, what I mean by "wanting safety and being willing to pay the price for it." The mere "wanting safety" isn't of much account unless it's joined with a recognition of the nature and scope of the problem and a willingness to provide preventive measures rather than pay an ever so much greater price in the form of death and injury.

With the knowledge already at their command, educators, enforcers and engineers could lead this nation into an almost complete solution of the post-war accident problem. That's for sure.

The Only Question

The big question—the only question—is whether they will be permitted to apply their knowledge by an aroused public opinion.

That's where you and I come into the picture. We hold the all-important key to the future safety of our country.

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ARISTOTLE ON CITY PLANNING

Writing in the 4th Century B. C., Aristotle says of city plans: "The arrangement of the private dwellings is thought to be more agreeable and more convenient for general purposes if they are laid out in straight streets, after the modern fashion, that is, the one introduced by Hippodamus; but it is more suitable for security in war if it is on the contrary plan, as cities used to be in ancient times, for that arrangement is difficult for foreign troops to enter and to find their way about in when attacking. Hence it is well to combine the advantages of both plans . . . and not to lay out the whole city in straight streets, but only certain parts and districts, for in this way it will combine security with beauty. (Politics VII, 10.)"—*The American City.*

The Design of Reflectorized "Stop" and "Slow" Signs

by MICHAEL ROBINSON
Traffic Engineering Division, City of Chicago

THE Traffic Engineering Division of the City of Chicago needed new "stop" and "slow" signs due to destruction and general deterioration of existing signs and stock pile depletion.

Embossed 24″ x 24″ octagonal "stop" signs and 24″ x 24″ square or diamond-shaped "slow" signs had been in general use. These signs were fabricated of No. 18 U. S. standard gauge sheet steel with the borders, bars and letters embossed. The reflectorizing material, as an overall background for the entire sign face, with the message and secondary messages painted or stenciled in black enamel, was able to withstand only several cycles of cleaning. The message, bars and borders faded or greyed-out, blending with the background into one mass. The reflectorizing material also had a tendency to pull away from the sign face. Thus the sign lacked punch and its effectiveness was lost.

In view of the fact that the Public Roads Administration of the Federal Works Agency, at the request of the Joint Committee on Uniform Traffic Control Devices, had developed rounded letters that were to become standard with governmental agencies having traffic engineering matters under their jurisdiction, it was decided to adopt whatever had been tentatively approved for incorporation in any new signs.

Morover, a new and improved reflectorizing material (Scotchlite) has been developed and unlike the old types, it has a synthetic resin base upon which small glass beads are set. It is practically impervious to water, and when properly applied to the sign plate will withstand several vigorous cleanings. To some extent, the physical quality of this new material, unlike paint, improves with its exposure to the elements.

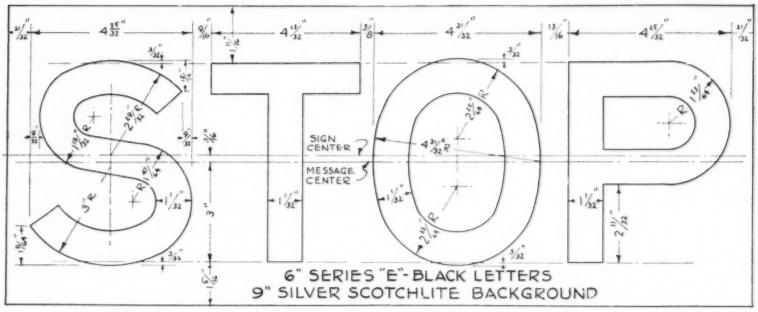
Experiments Conducted

Experiments were conducted with various combinations and designs, using reflectorizing materials (Silver and Yellow Scotchlite) and Federal Yellow enamel, all in accordance with the State of Illinois Manual of Uniform Traffic Control Devices, to determine the most effective sign background. The best results for both day and night visibility were obtained by dividing the sign area into three horizontal panels. The upper and lower panels were finished with Federal yellow enamel, and the center panel was covered with silver reflectorizing material for the message background.

The mounting of these signs eight feet above grade to minimize vandalism and destruction and to clear parked cars produced an optical problem in the centering of the message. There is a definite optical sign center that does not coincide with the exact mechanical center. This variation was found to be three-sixteenths of an inch below the mechanical center, thus providing a larger area of reflectorization above the message. Adjustment to this optical center had the desired effect of correcting the centering of the message.

Problem of Spacing

The State Manual on Uniform Traffic Control Devices does not contain specifications for the spacing of letters. Hence, the problem of spacing had to be given careful study. Experi-



Dimensions for new "stop" signs in Chicago.

ments in the combinations of letters were made to determine the proper grouping of the letters to avoid splitting them into groups of one or more letters. Our final tests determined the results shown on the drawing of the "stop" sign.

In the final analysis, it is believed the center reflectorizing panel is of sufficient area to produce the most desirable results at night, and that the upper and lower panels of Federal Yellow enamel will produce high attention value in daytime.

"Slow" Signs

Our "slow" sign was the conventional 24″ x 24″ square or diamond-shaped type, with the entire background covered with old style silver scotchlite and border and letters embossed. Here, too, we were at a loss for proper letter spacing with the rounded letters. The State Manual on Uniform Traffic Control Devices specifies that the "slow" sign shall be 24″ x 24″ minimum with eight-inch Series "C" letters. A nine-inch center strip was used with six-inch letters in the "stop" sign and the corresponding proportion for the center strip for eight-inch letters was 12 inches. Therefore the center panel of the "slow" sign was designed with a 12-inch strip of silver scotchlite.

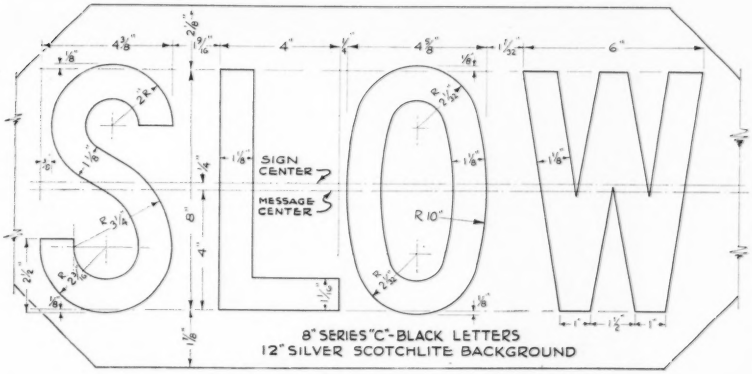
The optical center correction for the message "slow" was found to be one-fourth of an inch lower than the mechanical center, which is in proportion to the six-inch letters of the "stop" sign.

From the effectiveness of the "stop" sign we determined that bars above and below the message added to the distinctiveness of the sign. The horizontal bars distinctly divided the silver scotchlite center panel from the upper and lower yellow enamel panels. Lowering the center panel one-eighth of an inch below the mechanical sign center achieved the result of optically balancing the upper and lower panels. It was found that, since the overall area was somewhat larger and subject to more twisting and deformation, the horizontal bars, embossed on the "slow" sign, would stiffen and strengthen the sign.

Message Baked On

Previously the messages were stenciled to the scotchlite background; now they are to be baked, thus lengthening the life and readability of the sign and reducing greying-out of the message.

It was found by experiment that the proper grouping of the letters "S-L-O-W," due to the variation in their width, produced another problem. Balancing the relationship between the corresponding slopes of the



Dimensions for new "slow" signs in Chicago.

border, letter size and shape, space and background was finally attained after many trials and experiments. Our final tests determined the results shown in the drawing.

Secondary Messages Eliminated

In our considerations, the various unimportant secondary messages, such as "thru street," were eliminated to get as much target area as possible and center complete attention upon the basic message. The erection authorization legend, "City of Chicago," was reduced to half-inch letters, the size recommended by the Federal Manual. (Section 132, Manual on Uniform Traffic Control Devices.)

In specifications for these signs, due to priorities and scarcity of materials, an alternative thickness of metal was listed out of fairness to prospective bidders. We thought a heavy flat plate sign would suffice, since it would be mounted on a large bowl which would support the sign all around the periphery of the bowl. Fourteen gauge was the desired thickness for the flat plate sign and 16 gauge for the alternate with embossed borders and bars.

Cleaning

Chicago, like most major industrial and railroad cities, has atmospheric conditions and weather that create quite a disturbing cleaning problem. It was found that by scrubbing with a stiff bristle brush, using a detergent and a steam jenny, these signs can be kept relatively clean. In some sections of the city signs have to be cleaned more often than in others.

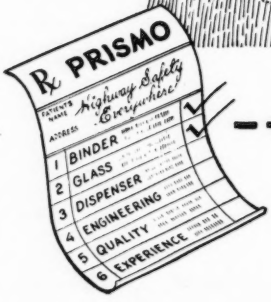
References: Traffic Engineering Handbook; Manual on Uniform Traffic Control Devices for Streets and Highways, (reprinted September, 1937); State of Illinois Manual of Uniform Traffic Control Devices for Streets and Highways (June, 1940); "Legibility Distances of Highway Destination Signs," (Proceedings, Highway Research Board, 1939); rounded letters prepared by the Public Roads Administration of the Federal Works Agency at the request of the Joint Committee on Uniform Traffic Control Devices.

★ ★ ★

BUS LOADING STRIPS TO SAVE ASPHALT WEAR

In Erie, the extensive displacement of the asphalt wear course at bus stops has led to construction of an experimental "bus loading strip" at a busy intersection where approximately 1,200 intra-city buses stop daily. Shoving and rutting of the three-inch sheet of asphalt on the six-inch plain portland cement base was the result of constant use by the heavy vehicles concentrating in the short space allotted for bus stops.

PRISMO "LIFELINE"



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THE PRISMO SAFETY CORPORATION

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HIGHWAY RESEARCH BOARD TO EXPAND

The executive committee of the Highway Research Board has announced that the work of the board is being enlarged to provide a greatly expanded highway research correlation service.

In the annual billion dollar program of highway improvement already provided for by Congress and the states, the need for research is recognized. The Federal-Aid Highway Act of 1944 provides for engineering and economic investigations and highway research necessary in connection therewith.

To Employ Field Engineers

To meet more adequately the imperative need for correlation and coordination of the work of the many research agencies, the Highway Research Board, an operating unit of the National Research Council, cooperating with the Public Roads Administration and state highway departments, will employ field engineers and provide for greater support of committee work and publications. Engineers of the board will spend a considerable part of their time visiting state highway departments and other research agencies in order to acquire comprehensive knowledge of current or past research in their several fields, and to disseminate first-hand information. They will supply technical assistance to the research committees and collect research items and reports for publication. Assistance in arranging for cooperative projects among the Federal government, the states, universities and other research agencies is another important service that may be rendered. The six departments of the board cover research in (1) economics, finance, administration; (2) design; (3) materials and construction; (4) maintenance; (5) traffic and operations; (6) soils.

Commenting on the announcement, Roy W. Crum, director of the board said: "The work of individual research men in a large number of organizations cannot be set in a mold by any overall agency, nor would it be desirable, but each investigator needs to be informed on past results and current activities in his field, and he needs facilities for contacts with other workers; also there is evidence that much valuable research is done but never reported. Committee work is an important factor in bringing the results of research work to fruition, for few fundamental improvements in practice are the results of any one man's work. Individuals are developed and made more useful to their own organizations by contacts with others at committee meetings and technical sessions and progress is accelerated through discussion and the need for arriving at agreements on new procedures. Through the Correlation Service such work in the highway field will be put on a more adequate and productive basis."

Objectives of the Service

The stated objectives of the highway research correlation service are: to collect available information concerning past, current and proposed research work relating to highways and highway transportation, of the Federal government, state highway departments, colleges and universities and other research agencies; to study and correlate the information by means of individual and group conferences and committee activities; to prepare reports and make recommendations based thereon; and to disseminate such information, reports and recommendations among the highway research agencies, to the end that they may be fully and promptly informed concerning research activities, and that a coordinated program of highway research may be planned and carried out

and thus avoid undesirable and unnecessary duplication of effort and secure greater economy and efficiency in the expenditure of public funds for research activities.

The correlation service will be in the immediate charge of Fred Burggraf, associate director, under the general supervision of Roy W. Crum, director. The executive committee includes Stanton Walker, chairman; R. L. Morrison, vice chairman; T. H. MacDonald, W. H. Kenerson, Pyke Johnson, Hal H. Hale, Burton W. Marsh, R. A. Moyer, F. V. Reagel, Charles M. Upham and J. S. Williamson.

POST-WAR HIGHWAY PROGRAM TO BENEFIT EDUCATION IN RURAL SECTIONS

Rural education will receive a great impetus from the post-war highway construction program, Charles M. Upham, engineer-director of the American Road Builders' Association, told a conference of educators in Washington, D. C., recently. Improvement of our secondary or country roads under the Federal-Aid Highway Act of 1944 will make possible the consolidations of thousands of school districts and thus raise educational standards for farm children, he explained.

"The little red school house is all right in tradition, but it had its drawbacks. Having to trudge daily through mud, dust or snow to reach it, impaired its value," Mr. Upham said. "All trends are now toward the modern consolidated school with pupils delivered in school motor buses, but these school houses depend upon the highways. Surveys show that there are between 5,000 and 10,000 rural school consolidations that should be made, but are now impossible because of road conditions."

Many Located On Dirt Roads

The engineer-director pointed out that a study made by his association in a number of representative counties showed that nearly 70 per cent were still on dirt roads. "Highways are the bottleneck to the growth and expansion of the consolidated school," he said, "but under the post-war program of over a billion dollars a year for construction purposes, more than $300,000,000 will go for farm-to-market roads. This is a good start on pulling our country schools out of the mud."

Mr. Upham held that even when the consolidated school could not be built at once, absences would be materially cut and the general tone raised in district schools by improving the highways on which they were located.

"America has 2,400,000 miles of rural roads serving 6,000,000 farms, but only 45,000 miles have a high type pavement and 99,000 miles have a low-type bituminous surfacing," Mr. Upham went on to say. "The rest of these country highways—2,262,000 miles—have a non-treated surface, are merely graded and drained, or are simply trails. When we consider the millions of farm children that must use such roads, the need for giving attention to our highways strictly from an educational angle becomes apparent."

He concluded by saying that improved country roads were also important for the rapid and regular delivery of farm products to market, the reduction of costs in car and truck operation over improved highways, the delivery of mail, and greater accessibility of the larger centers for shopping and pleasure trips.

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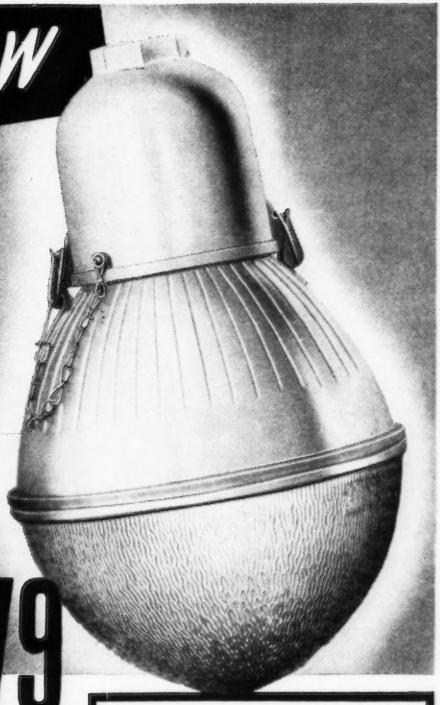

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POLICE FIND ONE CAR IN SEVEN HAS POOR BRAKES

One car in seven on our highways has poor brakes—brakes that probably could not stop that car in an emergency. This is the average shown by checks on 1,806,145 cars in the United States and Canada during the six weeks of the recent brake check program sponsored by the International Association of Chiefs of Police. More than 5,000 police chiefs and sheriffs directed tens of thousands of traffic officers who applied the brake check. Of nearly two million cars checked, 263,441, or 14.6 per cent, could not meet the simple requirement; they failed to take hold before the brake pedal came within an inch of the floorboard.

President Truman, upon receiving a special report of program results from IACP representatives, issued an appeal to every man and woman who drives an automobile to do his part to avert a threatened rise in traffic casualties by keeping his car in safe operating condition and by driving it with the utmost care. In so doing, he said, "every motorist can help in relieving our serious transportation problem and thereby aid further in the whole war effort."

Greater Vigilance Needed

Greater vigilance to prevent traffic accidents and unremitting attention to vehicle maintenance are called for, IACP officials and other traffic safety authorities agree. Senator Alben Barkley's recent comments on program results and the continuing need for car conservation and efforts for traffic safety appeared in the Congressional Record.

The high proportion of poor brakes revealed by the police check (not a comprehensive test, but a wartime device for screening out the worst cases) is attributed to (1) less regular car care resulting from curtailed car use, (2) wartime shortages of repair parts and service facilities, and (3) the fact that cars on an average are almost twice as old as in pre-war years.

Final reports from the states and provinces, covering the period of the check—April 15 to June 1, are complete for 45 states and the District of Columbia and for the nine Canadian provinces. The averages are not likely to be much affected by later information.

Detailed Reports

In the United States police checked the brakes of 1,664,317 cars; 241,998 or 14.5 per cent failed. Early reports indicated that the percentage of cars with poor brakes might be higher. In the first week the check requirement was not met by 16.4 per cent of the 240,440 cars checked in 35 states and the District of Columbia. Twenty of the reporting states had averages for the six-week period higher than the national average. Reporting units with the lowest percentages of cars failing to pass the check and their averages are: the District of Columbia, 2.9 per cent; Indiana, 9.2 per cent; Maine, 10.3 per cent; Maryland, 9.6 per cent; Massachusetts, 3.7 per cent; Michigan (four weeks), 7.4 per cent; Montana, 10.5 per cent; Nevada, 10.1 per cent; New Jersey, 5.6 per cent; New Mexico, 10.6 per cent; Pennsylvania, 9.5 per cent; Rhode Island, 8 per cent; Virginia, 7.9 per cent; and West Virginia, 9.4 per cent.

In Canada 141,828 cars were checked in the six-week period; 21,443 failed to meet requirements. The average of failures for the whole period was 15.1 per cent. British Columbia reported the lowest average of failures for the six weeks, 8.3 per cent. One other of the nine provinces had a percentage below the national average—Ontario with 13.2 per cent failing.

Fatality Curve Was Lower

Carried on during months in which travel mileage was on the increase, it is possibly significant that traffic fatalities increased only slightly during a period when much greater increases have occurred in other years. The traffic toll already was on the rise in March, up three per cent over March, 1944. Mileage traveled in rural areas increased 7.6 per cent that month, according to the Public Roads Administration. In April (the brake check started April 15) there were again three per cent more fatalities than in the same month a year ago; mileage was up 5.9 per cent. In May fatalities were two per cent higher than in the same month of last year, and mileage was 3.2 per cent higher. With the war over, all indications are that mileage will continue to increase, to perhaps 8,000 miles of travel per car in 1945. From a peak of 9,300 miles per car in 1941, travel for the average vehicle dropped to some 6,000 miles in 1943, and 6,600 miles in 1944.

The picture now is one of old cars traveling more miles on old tires and on highways that have deteriorated during the war. That mechanical condition is closely related to traffic safety is admitted. That both traffic safety and car conservation are vital to the war effort was repeatedly emphasized. A recent survey shows a marked letdown in conservation practices after V-E Day, credited to over-optimism about automobile replacement programs.

Police administrators and traffic authorities predict that there will be an unprecedented increase in traffic casualties unless the utmost effort is put forth by police, public leaders and citizens to hold down accidents and keep our cars running safely.

C.E.D. CONDUCTING RADIO SERIES

The Committee for Economic Development has initiated a series of weekly broadcasts called "Jobs After Victory" over a nation-wide hookup of the American Broadcasting Company (formerly the Blue Network). This program will run for 52 consecutive weeks at 7 to 7:15 P.M. (EWT) every Saturday evening. The series started Aug. 11.

Increasingly widespread recognition of the C.E.D. has resulted in this offer of free time by A.B.C.

The C.E.D. board of trustees has appointed in overall charge a radio committee which consists of Curtis Gager, vice chairman of C.E.D.'s field development committee; William Benton, C.E.D. vice chairman; Raymond Rubicam, C.E.D. research committeeman, and C.E.D. Chairman Paul G. Hoffman, ex-officio. Neil Jacoby, vice president of the University of Chicago, and professor of finance of the school of business, is serving as moderator of the program.

One type of program to be presented will dramatize planning for expansion by businessmen in large and small cities. Another type will be discussion of the nation's major economic problems by leaders in agriculture, industry, commerce, government and labor. Among those who already have agreed to appear are Treasury Secretary Fred M. Vinson, Eric Johnston, J. Raymond Walsh of CIO, C.E.D. Chairman Paul G. Hoffman, Walter Fuller and Beardsley Ruml.

This program is not aimed at mass audiences; it is primarily directed towards businessmen. Comments of interested persons will help to improve the program as it brings into focus the various major business problems that need solution. Send comments to Trade Association Division, Committee for Economic Development, 11 West 42nd Street, Room 834, New York 18, N.Y.

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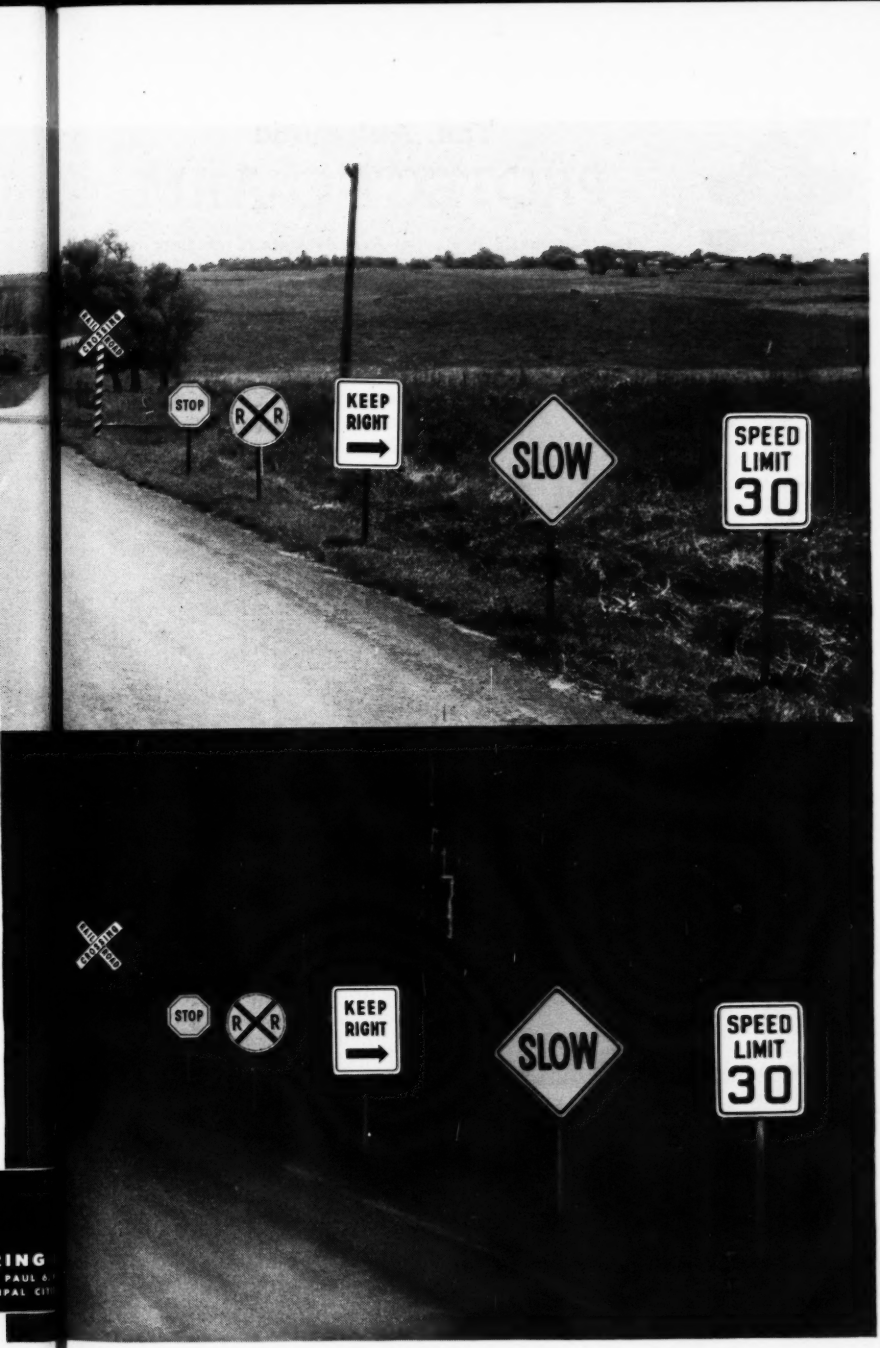
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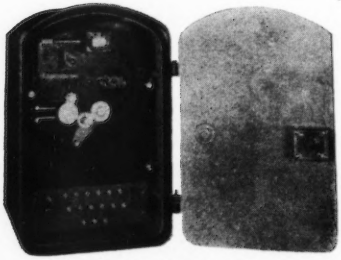

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"THERE IS NO SUBSTITUTE FOR EXPERIENCE"

Reducing Traffic Accidents On and Off Army Posts

by MAJOR ROBERT HOLMES, MEMBER, I.T.E.

Editor's Note: This article is reprinted from "Safety Training Digest," a publication of the New York University Center for Safety Education.

EFFORTS by post safety personnel to reduce traffic accidents involving Army vehicles should not be confined to the limits of military reservations. Traffic problems are similar on and off the post because Army vehicles are driven off the post and military personnel are exposed to off-post traffic hazards. Army safety personnel can assist in licking the whole problem by applying basically sound safety principles to on-post motor vehicle operations. The prevalence of such time-worn practices as "excessive speed," "unsafe backing," "following too closely," and "unsafe transportation of personnel" indicates that the personal factor must be given major consideration in the planning of accident-free post motor vehicle and traffic programs.

Military personnel are in daily contact with traffic in the following five main ways: as passengers in civilian cars, as drivers of civilian cars, as passengers in government cars, as drivers of government cars or as pedestrians.

The following factors also seriously affect the traffic accident problem: the average passenger car is eight years old, two-thirds of the natural rubber has been worn off civilian car tires, experienced vehicle drivers are fewer and adequate replacements are scarce, civil control of vehicle traffic is reduced because of manpower shortages, personnel movement (military and civilian) is by groups, and replacement of government vehicles in the United States has been discontinued.

The Three E's

Experienced civilian safety authorities have been attacking the national problem through the medium of the three "E's" of Safety—Engineering, Education, and Enforcement. These measures of civilian traffic control are equally effective for military usage. Military installations in this country are, in effect, urban centers and communities, and, as such, can be organized to handle a safety program in the same manner as local safety councils all over the country.

The following discussion indicates how each of the three "E's" can be applied at post, camp, and station level and sets forth the type of program that can be established.

Engineering

The "Engineering" approach to the traffic safety problem should be handled jointly by the post provost marshal, the post safety director and the post engineer. By proper use of certain types of surveys they (1) locate and eliminate potential hazards created by obstructions to visibility and inadequate street maintenance; (2) improve the efficiency of traffic movement by re-routing "through traffic"; and (3) recommend the proper use of uniform signs, signals and street markings and the utilization of enforcement personnel. One of the most important of these studies is the vehicle volume count, made to obtain an accurate record of the number and direction of vehicles proceeding through an intersection or along a street during a given period of time. The data thus obtained can be used (1) to justify the existence or installa-

tion of traffic signals; (2) to indicate the need for stop signs and the street on which the signs should be placed; (3) to indicate the relation of turning movements to accidents and congestion; (4) as a partial basis for determining "through streets" and special military routes; (5) as a partial basis for assigning traffic control personnel; and (6) to evaluate accident data and reveal the relationship of day and night traffic conditions.

Another typical study is the spot speed check, made by marking a section of roadway for either 88 or 176 feet and using a stop watch or electric timing device to determine the speed of travel along that street. Data obtained from a spot check of approximately 100 vehicles will: (1) aid in revealing whether or not speeds are too fast for existing conditions; (2) determine a reasonable speed limit for a location—the speed limit of any zone should approximate the speed at which 85 percent of the vehicles are operated; (3) aid in determining the type of warning sign (slow or stop) necessary, depending on the normal safe approach speeds at intersections; (4) determine the proper location of directional or warning signs, based on stopping distances for speeds observed; and (5) aid in planning an enforcement program.

Other worthwhile studies include a physical inventory of all signs, signals, markings and potential hazards, to promote greater uniformity of equipment, elimination of unnecessary equipment and removal of hazards; and law observance studies to determine the degree of driver obedience to stop signs and signals.

Education

An important medium of safety education at a post, camp or station is the proper selection and training of drivers. Unit commanders and automotive supervisors are responsible for such training, which includes the proper examination and licensing of all drivers of government-owned and operated vehicles. The written examinations and aptitude tests prescribed in FM 25-10, Motor Transport, provide adequate material for a careful screening of drivers. These examinations can be expanded generally to include operators of all vehicles in daily use on a post.

One of the most effective media of traffic safety education on a post is the use of traffic rules and regulations. Safety directors should study these regulations, with the assistance of the post provost marshal and post engineer, and upon assurance that they are complete in every detail, distribute copies to all drivers. Fundamental educational methods that are applicable at practically all military reservations include the use of: (1) local traffic safety ordinances posted where all personnel will read them; (2) radio skits on traffic safety; (3) traffic safety posters; (4) safety pamphlets and rule books; and (5) safety films and film strips. The post safety director will find local and state civilian safety authorities anxious to furnish information, material, time, and facilities to carry out this program. The national organizations listed in the attached bibliography have excellent resources relating to safety education, enforcement and engineering. Safety directors will find quick and willing response to their requests for assistance.

Enforcement

The military police are the enforcement authority to deal with the traffic problem at posts, camps and stations, and to assist civilian police to enforce proper traffic practices by

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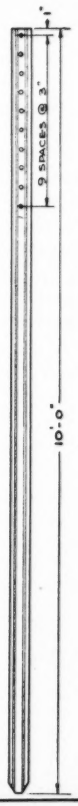
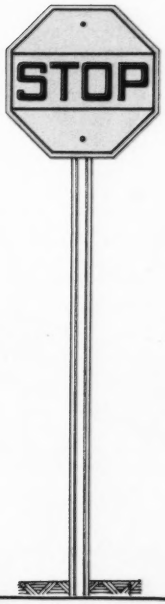


POSTS

STANDARD HIGHWAY SIGN POSTS

7 ft., 6 in.
10 feet
12 feet



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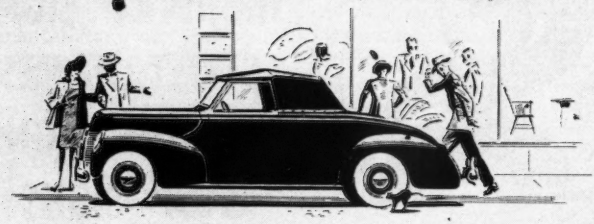
2 hours - 43 minutes!



Two hours and forty-three minutes is the average curb parking time revealed by a study made recently in the business district of a large (non-metered) American city.

Adds the report:

"NOW is the time for the proper authorities to take action toward meeting an impending critical condition on city thoroughfares—or the postwar volume of cars will find us unable to cope with the strain imposed by the extra traffic."

All motorists deserve a "break" when they drive downtown to shop or transact business. But they don't get it while long-time parking remains uncontrolled. Local merchants suffer, too.

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military personnel off the post. As representatives of the commanding officer of the installation, within the reservation they have police authority over all military and civilian personnel. Off the reservation, they often team up with local and state police to form dual patrols. In this manner, they are better able to deal with accidents and violations where military personnel are concerned and to carry out traffic safety programs sponsored jointly by military and civilian authorities.

Generally, military police are required to enforce (1) Army Regulations 850-15, "Motor Vehicles"; (2) orders of the commanding officer (set forth in Post Rules and Regulations); (3) "Rules of the Road," included in FM 19-5; (4) War Department Circular 323, 1942, directing compliance with the national speed limit of 35 MPH; (5) civilian traffic rules and regulations; and (6) other safe driving practices.

The most important of these items, from the standpoint of effective enforcement and a sound accident prevention program, is Army Regulations 850-15. In addition to other items pertaining to motor vehicles, these regulations cover the investigation and reporting of traffic accidents.

The military police normally investigate all accidents involving military personnel and Army vehicles and assist the driver to fill out, at the scene, the standard Accident Report Form 26, carried in all Army vehicles. In addition, the military police execute their own special report forms used for recording all the details of the accident. In this manner, they learn facts useful in preventing further accidents.

"Off Post" Accidents

"Off post" accidents can be handled similarly in cooperation with civilian police. Accurate records should be maintained in the post provost marshal's office. At many posts, camps and stations the claims officer cooperates with the provost marshal in investigating and recording accident data and maintaining a complete accident record file. Additional information pertaining to techniques, policies, and procedures of enforcement and accident investigation may be found in the text references in bibliography.

The following are the basic requirements for establishing a sound post traffic safety program:

a. Organize a post safety committee empowered to take necessary action. This committee should include the post provost marshal, post safety director, post engineer, post claims officer and person in charge of post motor transport. In addition, prominent local or nearby safety authorities, such as the police chief, traffic engineer, safety council head, automobile club representative, and radio and newspaper representatives may be asked to form an advisory council to assist in carrying out a program of mutual benefit to military and civilian authorities in the area.

b. Make a complete traffic survey of the installation for improvement of traffic control devices and elimination of hazardous conditions. The assistance and cooperation of the post provost marshal and post engineer will be needed.

c. Establish a sound accident investigation, reporting and record system with the assistance of the post provost marshal and post claim officer.

Other Measures

d. Review post traffic rules and regulations for possible improvements and wide distribution. This requires the assistance of the entire safety committee and the authority and backing of the commanding officer.

e. Review driver examination, testing, licensing, training and motor vehicle registration procedures to assure that sound principles are being taught

and proper steps are being taken to assure safe operation of all vehicles. The person in charge of post motor transport will be of valuable assistance in this survey.

f. Canvass local or nearby civilian safety authorities to determine the amount and kind of assistance available for carrying out joint enforcement and educational activities. This should be done by the post safety director, wtih the assistance of the post provost marshal and civilian law enforcement officials.

The entire program outlined above cannot be accomplished overnight, but the immediate application of any phase as a part of the projected program will aid materially in the reduction of accidents on and off posts.

REFERENCES

Military: FM 19-5, Military Police; FM 19-10, Military Police in Towns and Cities; FM 25-10, Motor Transport; TM 19-250, Military Police Records and Forms; TM 21-300, Driver Selection and Training; TM 21-305, Driver's Manual; AR 850-15, Motor Vehicles; TF 11-551, The Motor Vehicle Driver: Responsibility, Nomenclature, Fire Regulations, Accident Prevention; TF 11-552, The Motor Vehicle Driver: Hand Signals, Road Rules and Regulations; TF 10-2054, First Echelon Maintenance for Motor Vehicles; TF 9-2085, Shop Safety.

Civilian: "Accident Facts," National Safety Council; "Sportsmanlike Driving Series," American Automobile Association; "Man and the Motor Car," National Conservation Bureau; "Manual of Traffic Engineering Studies," National Conservation Bureau; "Manual on Uniform Traffic Control Devices," Public Roads Administration; "No Man's Land," (sound slide film), National Safety Council; "Danger—Traffic Jam Ahead," (film), National Safety Council; "X Marks the Spot," (film), N. J. State Dept. of Motor Vehicles; "Getting Results Through Traffic Engineering," National Conservation Bureau; Miscellaneous Automotive Safety Literature—National Safety Council, National Conservation Bureau, American Automobile Association, New York University Center for Safety Education, Institute of Traffic Engineers, Yale Bureau for Highway Traffic and Automotive Safety Foundation.

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"KEEP TO THE RIGHT" LAW SINCE 1813

The traffic rule "Keep to the Right" has been a law in New Jersey since the year 1813.

Previous to that time, New Jerseyites and Americans generally throughout the other states had followed the English custom of keeping to the left when overtaking or passing a vehicle coming from the other direction.

It was the Conestoga wagon with the teamster always at the left, either walking or astride the left wheelhorse, that influenced the change from the English practice of keeping to the left.

The governor of New Jersey that year was William S. Pennington, of Cumberland, who was paid a salary of $1,800 per annum for his services to the commonwealth. The population of the state was 245,000. It was an era of toll bridges and toll turnpikes.

The automobile had not yet made its appearance, of course, but there were traffic delays and traffic congestion notwithstanding. Confusion over the right-of-way reached such a stage that on February 18,1813, the Council and General Assembly enacted the first traffic law, discarding the English custom of keeping to the left and substituting it with the rule "Keep to the Right." Anyone deprived of the right of uninterrupted passing could be reimbursed $2 for each and every offense. The catch, however, was that he had to sue for the money.—*Highway Research Abstracts.*

★ ★ ★

STREET LIGHTING SYSTEM DESIGN

Cleveland recently completed the traffic safety lighting of two streets in one of its housing project areas which the Illuminating Engineering Society has cited as a good example of sound street lighting practice. One street carries a great deal of vehicular and pedestrian through traffic, the other carries little, if any, through traffic. How this problem was solved may prove helpful to you. For complete details, write for Item M-8455, Street and Traffic Safety Lighting Bureau, 155 East 44th Street, New York.

COUNTIES Solve Traffic Problems With

Traficounter

The Traficounter is used by scores of county highway departments throughout the country. Here is a typical comment, from the office of a county highway engineer regarding the excellent use being made of these precision built instruments.

"We have four Traficounters and find that they are a great help in getting continuous traffic count of certain sections of road. Our County road system is surfaced largely with pit run gravel and we have now reached a stage where—in our Post-War construction—we will have to do considerable regrading and bituminous surfacing.

"Traffic counts taken before gasoline rationing are proving valuable in determining what roads should be included in this program from a traffic standpoint."

This "lightning fast" automatic counter of motor traffic consists essentially of an electric counter and recorder which registers the count of cars that pass the detector. **Streeter - Amet Company, 1726 Belle Plaine Avenue, Chicago 13, Illinois.**

STREETER-AMET

When writing to advertisers, please mention TRAFFIC ENGINEERING

ANNOUNCEMENT

For more than three years our entire manufacturing facilities have been devoted to the production of vitally needed equipment as required by the Armed Forces of the United States Government.

Reconversion is now complete with us and our former line of TRAFFIC CONTROL EQUIPMENT, with the addition of many new revolutionary designs in reflectors, signs and signals, is now available.

THE GROTE MANUFACTURING CO.
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BELLEVUE, KENTUCKY

ITE NEWS AND PERSONALS

Don't forget the annual I.T.E. Business Meeting at Philadelphia September 17 and 18. Now that gasoline restrictions have been removed, it is hoped that a large number of members from the surrounding area will be able to attend.

PERSONALS

Foster M. Kunz (Jun.), and Mrs. Kunz are the proud parents of a new seven-pound baby daughter, born July 22. Mother and baby are doing fine, and so is the father.

Barney Cyberski has been commissioned a lieutenant in the Transportation Corps and is now assigned to the Pacific Theatre. He has indicated a desire to hear from Institute members, and others, concerning their professional activities. His address is: Lt. B. A. Cyberski, 0-2038106, Det. 3, Hq. and Hq. Co., APO 923, c/o Postmaster, San Francsico, Cal.

Major J. E. P. Darrell (Assoc.) is in Ledo, Province of Assam, India, a place he says he will be glad to leave any time. He is on leave from the Minnesota Department of Highways where he was assistant traffic engineer.

Walter Rosenwald (Mem.) advises that his bridge game is holding up fairly well because he has not played enough recently to go stale. However, he is hoping for a pilgrimage this summer which will enable him to discuss the fine points of the game with Paul Bunyan.

TO I.T.E. ON ITS 15th BIRTHDAY

* * *

The Institute has now grown up
In long pants, shall we say.
Its infancy is far behind,
It's reached a bright, new day.

Though 15 years seem rather long,
To some it may well seem,
To others, it is but a start—
The time to put on steam.

In 15 years the Institute
Has grown beyond its years;
Its membership has grown apace,
For that please have no fears.

Its officers, illustrious,
(Too many here to name),
Have proved themselves a splendid gang
And justly earned their fame.

A decade gone and five years more
Has brought the Institute
Up to a place of prominence
From just a tiny root.

So now, a toast is appropos
For many years in store.
A HAPPY BIRTHDAY, INSTITUTE!
And MANY, MANY MORE!

—*Harold G. Eckhardt (Mem.)*

OBITUARY

Allan T. Conroy (Jun.) was killed in action in Germany, I.T.E. Headquarters has been informed. He was employed by the Jamestown, N. Y., Department of Public Works before entering service.

Lieutenant Lawrence Edward Hendrickson, A.U.S. (Jun.), who was captured in the early days of the Pacific War, was killed when a Jap prison ship was sunk last December 15, according to word from Walter Rosenwald. A graduate of the University of Minnesota in electrical engineering, having obtained the Degree of Master of Science, 1937, Hendrickson also attended the Bureau for Street Traffic Research at Harvard during 1937-1938. Larry also was a member of the Illuminating Engineering Society. Before entering the service he worked as traffic engineer for the Minnesota Highway Department.

Safety Film Available

So successful has been the traffic safety education sound motion picture, "X Marks The Spot," produced for the New Jersey Department of Motor Vehicles, that arrangements have been made to furnish on outright sale basis only prints or copies in 16 mm. for use by any school, college, club, church, civic, municipal or police organization.

This film, which received the national award as the best motion picture on traffic safety, has a running time of 20 minutes. In addition to presenting a forceful message on safe driving, it provides a unique and interesting entertainment with a professional cast. For further information on obtaining prints, address, Safety Education Division, New Jersey State Department of Motor Vehicles, Trenton 7, N. J.

Tips On Inflation Of Automobile Tires

Mild overinflation of automobile tires—2 or 3 pounds—won't cause any harm and may be beneficial, but beyond that it is hard on the tires as well as the passengers.

INSTITUTE ACTIVITIES 10 YEARS AGO

Taken from Traffic Engineering, September, 1935

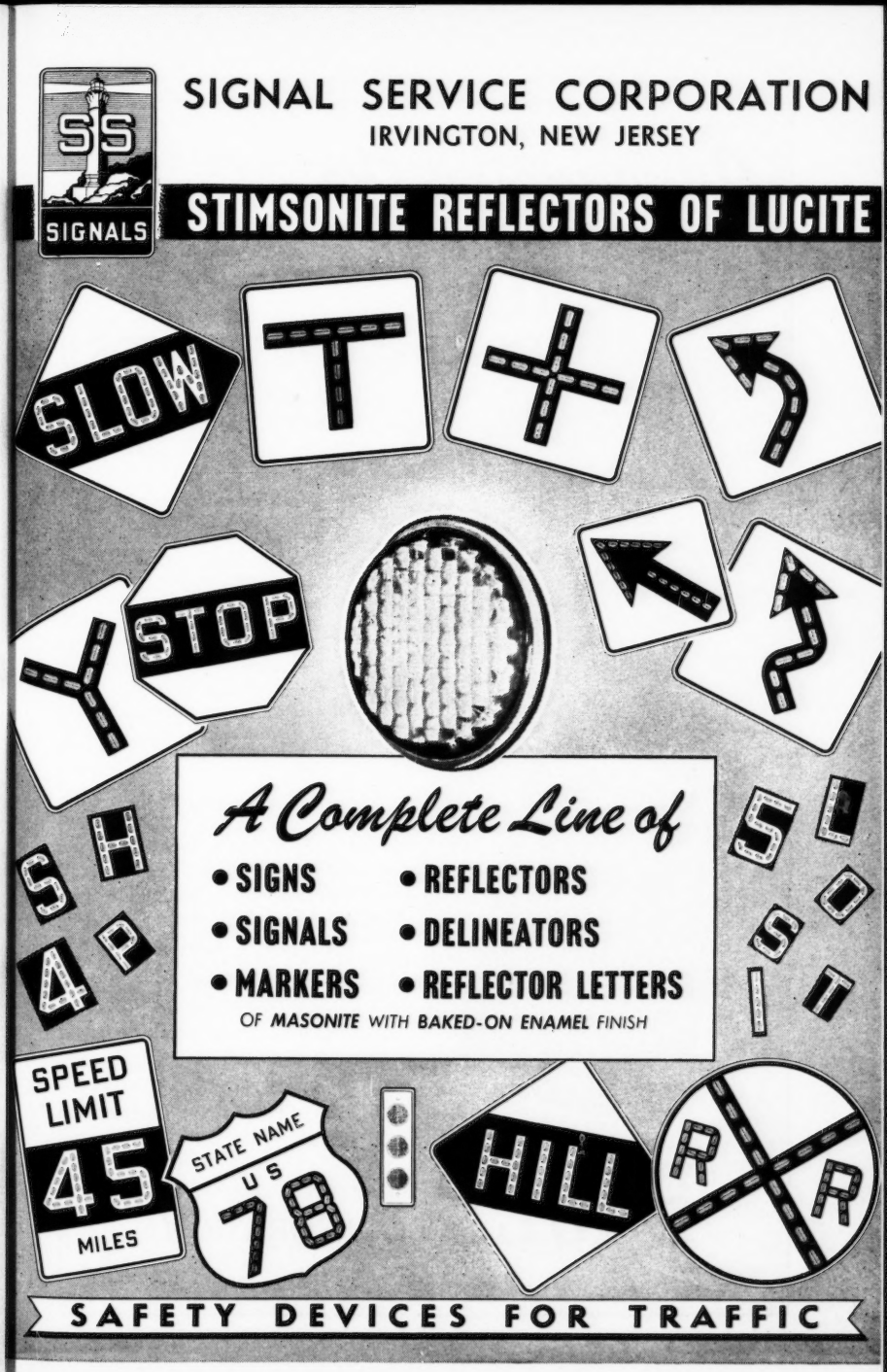
Maxwell N. Halsey, Lewis W. McIntyre, Burton W. Marsh, Roger L. Morrison, and T. M. Matson nominated for president of the Institute. For secretary-treasurer, Harold F. Hammond, Hawley S. Simpson; for directors, Ralph W. Eaton, Guy G. Kelcey, Arnold H. Vey and Sidney J. Williams. Election to be held at annual dinner.

E. W. James (Mem.), L. E. Peabody (Mem.), and Lawrence S. Tuttle (Assoc.), with others of the staff of the U. S. Bureau of Public Roads. conferred with Iowa State officials in Ames, Iowa, regarding arrangements for extensive highway planning studies to be made in that state.

Ernest P. Goodrich, first president of the Institute, was given the honorary degree of Doctor of Engineering by the University of Michigan.

Chicago newspaper conducting campaign to have traffic regulations changed to permit right turns on red lights.

Plymouth, Hudson, General Motors and Chevrolet, automobile manufacturers, join safety campaign.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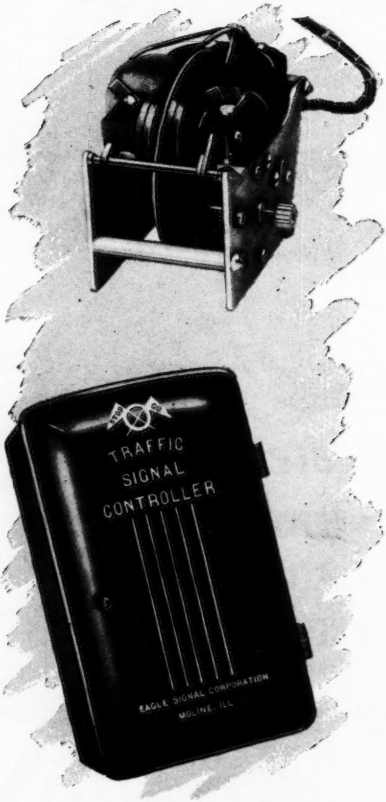

that gives greater efficiency to Eagle Traffic Controllers.

Features of New Motor

1. Powerful
2. Compact, Sturdy Design
3. Low Speed Disc Rotor
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5. Simple and Positive Braking Mechanism
6. Accessible
7. Definite Synchronism
8. Low Current Consumption
9. Low Maintenance Cost
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Eagle Leadership

The name EAGLE has always been the symbol of the best in safe, efficient traffic control. Year in and year out, a staff of competent electrical and mechanical traffic engineers are constantly working to make EAGLE products better, maintaining leadership in quality performance.

EAGLE SIGNAL CORPORATION

MOLINE ILLINOIS

THE USE OF PUBLIC RELATIONS TECHNIQUES IN A TRAFFIC MATTER

The Port of New York Authority is distributing 75,000 directional maps, similar to the accompanying illustration, to aid in guiding motorists in the use of Route S-3, the new two-mile connecting link between New Jersey Route 17 and the Lincoln Tunnel, according to an announcement by Vice-Chairman Joseph M. Byrne. The maps are being handed to all westbound motorists at the Lincoln and Holland Tunnels and the George Washington Bridge. In addition, supplies of the leaflets are being furnished local New Jersey planning boards, chambers of commerce and gasoline stations.

"The Port Authority is proud of the accomplishment of the New Jersey State Highway Commission in making this new highway available to motorists during a period when road construction has been all but impossible due to wartime restrictions, and the scarcity of labor and materials," Vice-Chairman Byrne said. "We are glad to cooperate with Commissioner Spencer Miller, Jr., and the State of New Jersey in distributing the S-3 road maps."

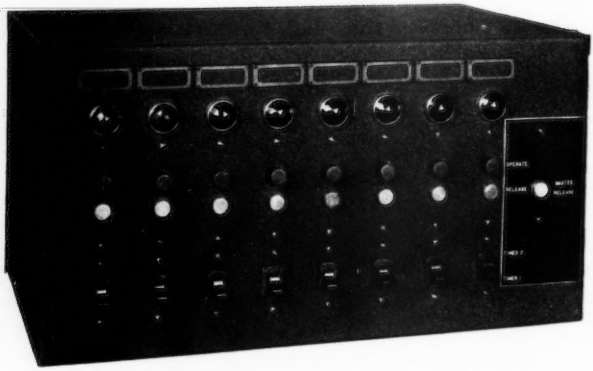
S-3, which is almost two and one-half miles shorter than the old route, will save ten minutes in travel time and eliminate a railroad grade crossing between nearby New Jersey communities, and the Lincoln Tunnel and midtown Manhattan.

★ ★ ★

ANOTHER DEFINITION OF RESEARCH

"Research is an organized method of finding out what you are going to do when you can't keep on doing what you are doing now"—research is a state of mind.—*C. F. Kettering.*

TRAFFIC SIGNALS by CROUSE-HINDS



EMERGENCY CONTROL CABINET

Passage of fire or other emergency apparatus through a signalized area is at best a dangerous proposition. To reduce this hazard, common practice has been to use an all-red indication on the entire traffic signal system.

The more modern method is to separate the signal system into several fire runs, so that only those signals on the streets being traversed by the fire apparatus are changed to all-red. This means elimination of unnecessary delays at all other intersections.

For operating the various fire runs, Crouse-Hinds has developed a master selector control. Push button switches permit the all-red indication to be displayed on any groups of signals, and the various groups are indicated by pilot lights on the panel. Timing of the all-red is automatic. Several timing relays and selector switches can be supplied when it is necessary to provide automatically more than one timing interval.

Release switches permit signals to be returned to normal operation before expiration of the all-red timing. All equipment is contained in an attractive steel cabinet which is suitable for mounting on the control desk in fire headquarters.

CROUSE-HINDS COMPANY

SYRACUSE 1, NEW YORK, U.S.A.

GO — CAUTION — STOP

INVENTORS OBTAIN OVER 6,000 PATENTS IN SECOND QUARTER OF 1945

Patent ownership is widely diffused throughout the country, according to a survey issued in the second quarter of 1945 and made public by R. J. Dearborn, chairman of the Patents Committee of the National Association of Manufacturers.

Every state in the Union was represented in the 6,253 United States patents issued to Americans between April 3 and June 26, according to the NAM survey. States receiving most patents were scattered from coast to coast—New York, Illinois, New Jersey, Ohio, California and Michigan in that order. On a per capita basis the highest ranking states were Delaware, New Jersey, Connecticut, Michigan and Illinois, in that order.

Research activities of the government were reflected in the high number of patents issued to residents of the District of Columbia. Washington, D. C., ranked above 30 states in total number of patents, and only eight exceeded it on a per capita basis.

"No corporation, industry or section of the country has a monopoly on inventions and research," said Mr. Dearborn. "Inventors, of course, make up a larger part of the population in industrial states just as farmers do in agricultural states. The results of the research and invention, however, benefit all of the country.

"All of our industries, jobs and incomes are to a large extent based on patented inventions. This is as true for the clerk of the retail store, the garage mechanic or a salesman as it is for the factory employee.

"Our civilization is based on science. Patent protection to stimulate scientific and technological progress will be more important now that the war is over than ever before. It will be vital to thousands of small companies which cannot compete successfully against the abundant resources and facilities of large corporations unless patents protect their new inventions and discoveries against piracy."

TAX DIVERSION HAS DEPRIVED HIGHWAYS OF $2,000,000,000, A.R.B.A. LEADER SAYS

American highways have been deprived of more than $2,000,000,000 in the past few years through tax diversion, James J. Skelly, president of the American Road Builders' Association, pointed out in a recent highway conference in Washington, D. C. The Media, Pa., contractor praised the federal-aid airport bills now before Congress for provisions which prohibit the practice. He cited the McCarran Bill (S-2), favorably reported by the Senate's Commerce Committee, which provides that federal funds for airports will be withheld from those states that divert any taxes on aviation fuel or other special fees on aircraft, aviation or aeronautical facilities or operations.

"Our organization is much interested in airports and airport legislation because the same methods, equipment and materials are used in both forms of construction," said Mr. Skelly. He added that the association had been called upon for expert testimony at the hearings on the pending airport bills.

"The present federal-aid highway law, while declaring that it is unfair and unjust to tax motor vehicle transportation unless the proceeds are applied to the construction, improvement or maintenance of highways, may deprive the state of only up to

one third of its federal aid for such diversion," Mr. Skelly pointed out. "In consequence, all but 15 of the states divert all or part of their highway user taxes to general funds, education, relief or other purposes.

"Sixteen states have passed anti-diversion amendments to their constitutions—California, Colorado, Idaho, Iowa, Kansas, Maine, Michigan, Minnesota, Missouri, Nevada, New Hampshire, North Dakota, Oregon, South Dakota, Washington and West Virginia," the Road Builders' president stated.

Amendments will be voted upon in Pennsylvania this Fall and in Maryland and Texas at the general election in 1946. Voters of Indiana and Tennessee will consider the question in 1947, but the bill must also be passed by the legislature of that year. At the last session of the Illinois legislature, a resolution in opposition to diversion was passed.

"Oregon in 1919 was the first state to tax gasoline for highway purposes and others rapidly adopted this means of raising revenue," said Mr. Skelly. "In 1925, we find the first record of this tax being used for something else. Up to 1932, raids on the gas tax were nominal, but in the past 12 years, the states have been dipping in more and more until the staggering total of more than $2,000,000,000 was reached. Our post-war highways are going to need every cent that is available." Figures for 1943 show $155,455,000 diverted from a net total receipt of $1,108,849,000. This sum came from motor fuel taxes, motor vehicle fees and fines, motor carrier taxes and the like, Mr. Skelly explained. Among the states making the greatest diversions were New York, California, Florida, Ohio, Pennsylvania, Texas, Georgia and Illinois.

In drawing your Plans for Safer Highways-be sure to include the Guard Rail – that Safeguards
Mark well these TUTHILL features:
1. Higher visibility.
2. Lower upkeep.
3. Easy installation.
4. Deflective action.
5. Low, spring mounting.
TRAFFIC and Safety Engineers, attention! Your post-war (and present) safety highway construction program can be made most effective with TUTHILL—the BETTER Guard Rail. Strong, resilient, visible, easy to install and maintain, it will pay you to specify and use.
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Special Notice!
TUTHILL Guard Rails are now available. What are your requirements?
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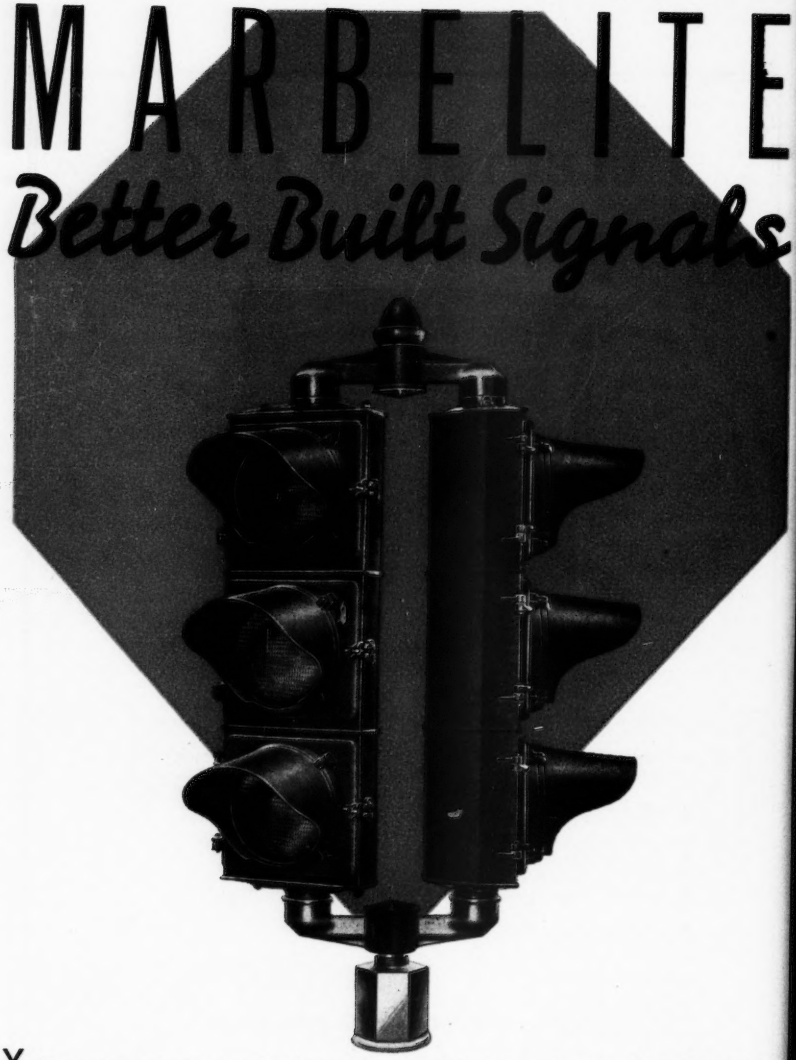

YOU can determine by just looking at this advanced design of a Two Way, Three-Color adjustable Signal that it is BETTER-BUILT.

Note the reinforced aluminum mounting brackets that replace the conventional pipe and fitting assembly. A compact, sturdy arrangement, eliminating small, minor parts.

You bet! It is BETTER-BUILT quality.

That isn't all, but it gives an idea of why Marbelite Signals are approved by numerous State and City Traffic Departments as well as Traffic Associations, and why there are so many thousands of Marbelite Signals in use in these Cities and States.

Familiarize yourself with other Marbelite features, such as the unbeatable optical unit. You will be proud to have such fine quality Signals regulating traffic in your community.

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